

Letter to the editor on article "Atrial septal defect patients with greater shunts show susceptibility for ventricular arrhythmias"

Dear Editor,

We read with interest the original research article concerning the arrhythmogenesis susceptibility in patients with atrial septal defect (ASD) by Yontar O.C. in current edition of Heart, Vessels and Transplantation journal (1). The study supplied valuable and novel information on relationship of shunt ratio (Qp/Qs) with ventricular arrhythmic predisposition in patients with ASD. To date, Tpeak-Tend and its ratio to corrected QT interval ((Tp-Te)/QTc) have to be proven as reliable markers of repolarization in various cardiovascular conditions, thus substantially replaced the classical repolarization markers, such as QT, QTc (2, 3).

The first question appeared regarding to study design, though authors did not mention about age specificity. The mean ages were given as 40.5 (12.5) and 38.9 (12.7) years by groups. Were there solely adult patients or any pediatric or adolescent subjects (≤ 18 years) in this study population? Because pediatric and adult CHD patients significantly differ, that is why they must be evaluated separately (4, 5).

Actually, ASD is characterized by mostly atrial and supraventricular tachycardias. Closure of defect significantly decreases the prevalence of arrhythmias. Ventricular tachycardia is mostly observed in patients with ventricular septal defects and other complex congenital heart disease forms (6, 7). Despite the implementation of aforementioned repolarization indices in other cardiac conditions (coronary artery disease, valvular heart diseases, cardiomyopathies), currently there is no evidence on these parameters in congenital heart diseases (2). In order to confirm usefulness of Tp-e, Tp-e/QtD, study had to include ventricular arrhythmic events for a given timeline, preferably before and after correction.

Authors concluded that, the repolarization indices are indicative of sinus node autonomic dysfunction. However, they should provide the basis for that statement with objective parameters, such as heart rhythm variability indices. A 24-hour Holter monitoring precisely assists in the

defining of autonomic parameters in patients with ventricular arrhythmias (8).

Authors also hypothesized the association of fibrosis with hemodynamic abnormalities in right heart chambers of this particular population. A surrogate marker of systolic function of right ventricle, namely the TAPSE (tricuspid annular systolic excursion) was significantly decreased in high shunt ratio group and clearly supports their hypothesis. Per se, the assessment of right heart diastolic function is recommended in patients with known/suspected right heart dysfunction according to ASE guidelines (9). If the right heart diastolic function was evaluated it would be worsened in ASD patients with high Qp/Qs, additionally supporting the fibrosis hypothesis of authors.

Sincerely,

Damirbek A. Abibillaev

Scientific-Research Institute of Heart Surgery and Organ Transplantation,
Bishkek, Kyrgyz Republic

Peer-review: Internal

Conflict of interest: None to declare

Authorship: D.A.A.

Acknowledgement and funding: None to declare

References

1. Yontar OC. Atrial septal defect patients with greater shunts show susceptibility for ventricular arrhythmias. Heart Vessels Transplant 2020; 4: doi: 10.24969/hvt.2020.206
2. Gary T, Bryan PY. Traditional and novel electrocardiographic conduction and repolarization markers of sudden cardiac death. EP Europace 2017; 19: 712–21. doi: 10.1093/

europace/euw280.

3. Surawicz B. The QT interval and cardiac arrhythmias. *Ann Rev Med* 1987; 38: 81-90.
4. van der Bom T, Zomer AC, Zwinderman AH, Meijboom FJ, Bouma BJ, Mulder BJM. The changing epidemiology of congenital heart disease. *Nat Rev Cardiol* 2011; 8: 50–60. doi: 10.1038/nrcardio.2010.166
5. Tutarel O, Kempny A, Alonso-Gonzalez R, Jabbour R, Li W, Uebing A, et al. Congenital heart disease beyond the age of 60: emergence of a new population with high resource utilization, high morbidity, and high mortality. *Eur Heart J* 2014; 35: 725–32. doi: 10.1093/eurheartj/eh257
6. Chubb H, Whitaker J, Williams SE, Head CE, Chung NA, Wright MJ, et al. Pathophysiology and management of arrhythmias associated with atrial septal defect and patent foramen ovale. *Arrhythm Electrophysiol Rev.* 2014; 3: 168-72. doi: 10.15420/aer.2014.3.3.168
7. Hanash CR, Crosson JE. Emergency diagnosis and management of pediatric arrhythmias. *J Emerg Trauma Shock* 2010; 3: 251-60. doi: 10.4103/0974-2700.66525.
8. Bjelakovic B, Ilic S, Chouliaras, K, Milovanovic B, Vukomanovic V, Bojic T, et al. Heart rate variability in children with exercise-induced idiopathic ventricular arrhythmias. *Pediatr Cardiol* 2010; 31: 188–94. doi: 10.1007/s00246-009-9582-3.
9. Rudski LG, Lai WW, Afalo J, Hua L, Handschumacher MD, Chandrasekaran K, et al. Guidelines for the echocardiographic assessment of the right heart in adults: a report from the American Society of Echocardiography. *J Am Soc Echocardiogr* 2010; 23: 685-713.



Peterhof, Finnish Bay, Baltic Sea, Summer 2018. Elima Kudaiberdieva, Bishkek, Kyrgyzstan